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OFFICE OF
THE INFANTRY BOARD
TEST SECTION

DECEMBER 14, 1942

SUBJECT: TEST OF T-20 MACHINE PISTOL

TO: THE PRESIDENT, THE INFANTRY BOARD, FORT BENNING, GEORGIA

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# REPORT

## of

TEST SECTION

# The Infantry Board

**No.** 6

T-20 MACHINE PISTOL

**FORT BENNING, GEORGIA**

Dec. 14, 1942.

24725—Benning, Ga., 9-16-42—2,000

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3. Special emphasis is placed by the Ordnance Department on the ease of production of this weapon, and the fact that a serious shortage in production facilities for similar weapons now standard exists and will continue to exist far beyond the time when the subject weapon could be placed in production.

4. A special feature of the gun which is of importance in the general view of the present war is that which permits a ready interchange of calibers between that standard in our service and that used in European countries in a few seconds and without the use of tools. This fact, together with adaptability for dropping from the air by parachute in small, compact containers which also contain a supply of ammunition, should be carefully considered.

5. It is desired that the Infantry Board subject this weapon to as complete a test as available time and ammunition will permit covering the points above enumerated and any others that the Board may consider appropriate and important, and submit a report as to the suitability of this weapon for adoption either as standard or substitute standard.

6. One copy of report on "First Test on T-20 Machine Pistol" from Aberdeen Proving Grounds is inclosed for your information. Lieutenant Cooper will explain special features of the gun and be ready to supply any technical information desired by the Board.

7. It is requested that arrangements be made for transportation and accommodations for Lieutenant Cooper.

For the Chief, Ground Requirements Section:

(Signed) W. F. Dean,
Colonel, G. S. C.,
Executive,
Ground Requirements Section.

1 Incl.
Report on "First Test
on T-20 Machine Pistol".

C O P Y



APPENDIX "A"

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IB-472.5

December 17, 1942.

SUBJECT: T-20 Machine Pistol.

TO: Chief, Ground Requirements Section,
Army Ground Forces, Army War College,
Washington, D. C.

1. The Infantry Board concurs in general in the conclusions of the Report of Test of The Test Section, The Infantry Board.

2. It is the opinion of the Infantry Board that the T-20 Machine Pistol will be a satisfactory sub-machine gun when modified as indicated in paragraph 26 h of the Report of Test.

3. The Infantry Board recommends that the T-20 Machine Pistol, modified as indicated in paragraph 26 h of the Report of Test, be standardized for all units now equipped with a sub-machine gun.

For the President:

M. J. CUMMER,
Colonel, Infantry,
Director.

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## I AUTHORITY AND REFERENCE

1. Authority: - Letter, Requirements Section, Hq. A.G.F., December 7, 1942, with 1st Ind. The Infantry Board, December 11, 1942.

2. Reference: - 231st Partial Report on Functioning and Mechanical Tests of Machine Guns and Machine Gun Accessories and First Test on the T-20 Machine Pistol.

## II PURPOSE OF TEST

3. "To subject this weapon to as complete a test as available time and ammunition will permit covering the points above enumerated and any others that the Board may consider appropriate and important, and submit a report as to the suitability of this weapon for adoption either as standard or substitute standard." See Par. 2, Appendix "A".

## III PERSONNEL

4. Tests were made by members of the test section, soldiers from the 29th Infantry, and a parachute representative under the supervision of Major Sam E. Snyder, Test Officer, The Infantry Board.

## IV INTRODUCTORY INFORMATION

5. The T-20 Machine Pistol is a light shoulder weapon composed of simple parts assembled with large tolerances making interchanging of parts easy. It has the following characteristics:

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a. The receiver is made of two stamped identical halves of sheet metal welded together.

b. The .45 Cal. barrel (interchangeable with 9mm) is screwed into the front of the receiver.

c. The bolt face and barrel are the only parts requiring fine machine work.

d. All other parts are extremely simple.

e. The weapon may be stripped and assembled without use of tools.

6. Lt. E. G. Cooper, O.D. (who brought the weapons) explained the following test, made at Carrabelle;

a. Salt water tests:- Weapon with loaded magazine was submerged in ocean water for about two minutes, drained, fired 60 rounds with no malfunctions.

b. Beach in surf:- Weapon with loaded magazine was dropped in surf on sand, as waves receded sand was thrown on weapon, drained, fired 30 rounds with 5 failures to feed due to sand in magazine. Gun was then rinsed in ocean, fired 70 rounds with no failures.

7. Aberdeen report offers the following comparison of groups fired from fixed rests at 100 yards with several weapons as follows:

Semiautomatic Fire

| Weapon | Extreme Vertical Spread | Extreme Horizontal Spread |
|---|---|---|
| T-20-Cal. .45 | 7.61 inches | 7.10 inches |
| T-20-9mm | 6.04 " | 7.04 " |
| M-1928A1 Thompson | 9.71 " | 6.28 " |
| L-1 Thompson | 11.20 " | 6.63 " |
| M-2 S/M | 8.20 " | 6.90 " |
| Mk III Sten - 9mm | 6.14 " | 11.17 " |

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Automatic Fire

| Weapon | Extreme Vertical Spread | Extreme Horizontal Spread |
|---|---|---|
| T-20-Cal. .45 | 6.65 inches | 7.65 inches |
| T-20-9mm | 5.65 " | 7.63 " |
| M-1928A1 Thompson | 10.25 " | 9.68 " |
| M-1 Thompson | 11.75 " | 7.65 " |
| M-2 S/M | 9.53 " | 8.68 " |
| Mk III Sten - 9mm | 11.34 " | 12.97 " |

8. Lt. Cooper arrived the afternoon of December 9th. He brought two of the subject weapons and 9mm Barrel, Bolt and Magazine adapter. Tests started the morning of December 10th and terminated the morning of the 12th. Lt. Cooper departed the afternoon of December 12 taking weapons.

V DETAILS OF TESTS

9. Test No. 1.

a. Purpose: To determine physical characteristics of the subject weapon.

b. Method: By inspection, weighing and measuring.

c. Results:

| | | |
|---|---|---|
| Weight of .45 Cal. assembly w/o magazine | | 7.66 lbs. |
| " " 9mm " " " | | 7.74 " |
| " " .45 Cal. Bolt | | 1.96 " |
| " " 9mm " | | 1.81 " |
| " " .45 Cal. Magazine | | .65 " |
| " " 9mm " | | .68 " |
| " " .45 Cal. " loaded | | 2.02 " |
| " " 9mm " " | | 1.48 " |
| Length of weapon stock extended | | 28.35 inches |
| " " " " telescoped | | 21.5 " |
| " " " less barrel | | 14.75 " |
| Width " " " magazine | | 7.25 " |
| " " " with " | | 2.00 " |
| Thickness of weapon | | 2.2 " |
| Cyclic Rate Cal. .45 | about | 400 rpm |
| " " 9mm | " | 500 rpm |

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10. Test No. 2.

a. Purpose: To determine the ease of stripping and assembling when taught to enlisted men of varied stages of training.

b. Method: Six enlisted men were given one full explanation of disassembling and assembling accompanied by an explanation of functioning. The six men then disassembled and assembled the gun against time. These men were observed throughout the remaining tests to determine whether or not they retained the information and handled the weapon properly.

c. Results:

| | Disassembly | Assembly |
|---|---|---|
| 1 | 1.38 minutes | 3.40 minutes |
| 2 | 3.08 " | 4.15 " |
| 3 | 1.20 " | 4.00 " |
| 4 | 2.35 " | 5.20 " |
| 5 | 2.05 " | 12.10* " |
| 6 | 1.30 " | 2.30 " |
| Average | 1.89 " | 5.19 " |

* Had trouble locating sear pin in position.

None of the men had any trouble in handling the weapon during the two days of firing.

11. Test No. 3.

a. Purpose: To determine the accuracy of the subject weapon and other weapons in the hands of soldiers of varied degrees of training.

b. Method: By having each soldier fire

1. 50 rounds in groups of 10 shots semiautomatic.
2. 50 rounds on one target in bursts of 3 - 5 rds.

range?

c. Results: (Average)

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(1) Semiautomatic fire. Prone position.

| Weapon | Max. Horizontal | Max. Vertical |
|---|---|---|
| Hyde Inland | 3.89 inches | 5.27 inches |
| M1928A1 Thompson | 4.59 " | 4.62 " |
| T-20 | 4.84 " | 5.88 " * |

* The main group of the T-20 was better than the other groups but due to the inability of the firers to release the trigger after each shot most groups contained at least one burst of two rounds. The test officer, Major Snyder, fired two strings of 15 rounds with the following results:

| Weapon | Max. Horizontal | Max. Vertical |
|---|---|---|
| T-20 Cal. .45 | 3.3 inches | 3.65 inches |
| T-20-9mm | 2.45 " | 2.5 " |

(2) Automatic fire, bursts of 3 - 5 rounds. Prone.

| | T-20 | Hyde | Thompson |
|---|---|---|---|
| Shots on target 3' x 5' | 98 % | 96 % | 89 % |
| " in 1' x 2' area | 61 % | 86 % | 77 % |

12. Test No. 4.

a. Purpose: To determine the accuracy of the subject weapon and other weapons in the hands of soldiers of varied degrees of training.

b. Method: By having each soldier fire 30 rounds in bursts of 5 to 10 shots with each weapon at a 3' x 5' target at an aiming point.

c. Results:

| | T-20 | Hyde | Thompson |
|---|---|---|---|
| Shots on target 3' x 5' | 81 % | 84.5 % | 70.5 % |
| " on 1' x 2' area | 30% | 40% | 27.5 % |

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13. Test No. 5.

a. Purpose: To determine the accuracy of the subject weapon and other weapons in the hands of soldiers of varied degrees of training.

b. Method: (1) By having each soldier fire twenty shots in 20 seconds at 5-"E" targets spaced at 3 yard intervals to the front with each gun.

(2) By having each soldier fire as many shots as possible at the same targets in 25 seconds, starting with a twenty round magazine.

c. Results:

| | Weapon, | Rounds Fired, | Percentage of hits |
|---|---|---|---|
| (1) | T-20 | 120 | 82.5 * |
| | Hyde | 120 | 98.3 |
| | Thompson | 120 | 96.7 |
| (2) | T-20 | 203 | 66.5 |
| | Thompson | 200 | 69.5 |
| | Hyde | 173 | 68.2 |

* As in Test No. 3 the inability of the soldier to release the trigger of the T-20 in time to prevent two shots in many instances. In this test part (1) there were 24 such shots contributing to the lower score.

14. Test No. 6.

a. Purpose: To determine the relative efficiency of the subject weapon and other weapons when fired in a down pour.

b. Method: Each weapon was cleaned, lubricated lightly with oil as prescribed in regulations, and fired under a full spray of water until results were evident.

c. Results:

(1) Thompson - M1928A1. 765 rounds fired.

365 rounds of steel case ammunition was fired with 88 stoppages, the weapon was then cleaned and lubriplated,

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207 rounds of Brass case ammunition was fired with 6 stoppages,
143 rounds of Steel case ammunition was fired with 5 stoppages,
50 rounds of Brass case ammunition with one misfire.

(2) Hyde-Inland. 20 rounds fired.

10 rounds of Steel case ammunition was fired with 4 stoppages, gun was cleaned, lubriplated and
10 rounds of Brass were fired with ten stoppages. It was evident that the weapon was out of order. It was withdrawn from the tests.

(3) T-20 Cal. .45. 539 rounds fired.

365 rounds of Steel case ammunition was fired with 15 stoppages,
174 rounds of Brass case ammunition was fired with 1 stoppage.

15. Test No. 7.

a. Purpose: To determine the relative efficiency of the subject weapon and Thompson when subjected to dust.

b. Method: (1) The weapons were cleaned and oiled lightly. Loaded magazines were inserted with bolts back ready to fire. The weapons were placed in the dust box and a measure of dust blown onto them. They were then fired.

(2) Same as (1) above except that the bolts were forward and magazines removed.

c. Results:

(1) Thompson: - 100 rounds of brass case ammunition was fired with 7 stoppages. 30 rounds of steel case ammunition were fired with 4 stoppages.

T-20 Cal. .30: - 108 rounds of brass case ammunition was fired with 4 stoppages. 30 rounds of steel case ammunition was fired with 4 stoppages.

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(2) Thompson:- 30 rounds of Brass case ammunition was fired with 9 stoppages.

T-30, Cal. .45: - 30 rounds of Brass case ammunition was fired with no stoppages. 30 rounds of Steel case ammunition was fired with 1 stoppage.

16. Test No. 8.

a. Purpose: To determine the relative efficiency of the subject weapon and the Thompson M1928A1 after being dropped into thin mud.

b. Method: The weapons were cleaned and oiled lightly, loaded magazines were inserted with bolts forward, a plug was inserted in the muzzle and the weapons dropped into a trough of thin mud. The gun was quickly removed, shaken, the plug removed and fired.

c. Results:

(1) Thompson: - Failed to fire on 1st, 2nd and 3rd round. A clean magazine was inserted. The weapon would not fire.

(2) T-30 Cal. .45: -

30 rounds of Brass case ammunition was fired with 8 stoppages.

30 rounds of Steel case ammunition was fired with 3 stoppages.

30 rounds of Brass case ammunition was fired with 1 stoppage.

17. Test No. 9.

a. Purpose: To determine the opinions of the six soldiers who participated in firing all the tests.

b. Results:

(1) The Parachute Sergeant stated that the T-30 was simpler and as good as the others.

(2) The remaining five men agreed that the T-30 was simpler, more reliable and generally more satisfactory than the Thompson and the Hyde-Inland.

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18. Test No. 10.

a. Purpose: To determine the handling qualities of the T-20 Machine Pistol.

b. Method: The Test Officers, already familiar with the other weapons, fired the subject gun about 200 rounds each, semiautomatic and full automatic.

c. Results: They agreed that the T-20 was as well balanced and simpler to handle than the other weapons. At the end of the trials one of the officers fired a full burst of 30 rounds at a target at 25 yards with 21 hits within six inches of the aiming point.

19. Test No. 11.

a. Purpose: To determine the relative penetration of wet pine.

b. Results:

| | |
|---|---|
| T-20 Cal. .45 | 3.5 inches |
| T-20 9mm | 5.3 inches |
| Thompson | 3.5 inches |
| Hyde | 3.5 inches |

20. Test No. 12.

a. Purpose: To find a method of carrying the weapon and ammunition.

b. Method: By trial of standard and experimental equipment.

c. Results: It was found that the experimental "grenade" bag now under test was the most promising equipment for carrying both the gun and ammunition.

| | |
|---|---|
| Bag "Grenade Carrying" | 1.00 pound |
| T-20 l.m.p. Cal. .45 | 7.66 " |
| 10-magazines loaded (300 rounds) | 20.20 " |
| Total weight | 28.86 " |

21. All tests were fired at 1000 inches.

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VI DISCUSSION

22. Tests indicate that the T-20, I.M.P.;

a. Is simple and easy to learn,
b. easy to assemble and disassemble,
c. easy to handle,
d. more reliable than the Thompson or Hyde Inland,
e. about equally effective in the hands of men of varied training,
f. superior in effect when fired by experienced men,
g. easier to transport and
h. more accurate.

23. The T-20 I.M.P. has indicated two weaknesses in these tests; (No. 3 pistol was used in tests)

a. The magazines being of soft metal were easily deformed at the lips. These deformations together with an apparently under powered spring contributed to a % of the stoppages that occurred during these tests.

b. The cocking pawl should be studied with the idea of modifying it to prevent malfunctions. No. 5 pistol which was used for demonstration only produced the same defect.

24. It was quite evident that the T-20 Machine Pistol, with its greater tolerances was more reliable under bad conditions than the M1928A1 Thompson or the Hyde-Inland guns used in the tests. Giving these weapons due consideration for the wear and tear of prior tests and general use it is quite evident that the T-20 is at least equal to them.

25. Two things must be taught to men who use the T-20 l.m.p. as follows;

a. That the ejection port must be fully opened during firing.

b. That if a cartridge or case remains loose in the receiver, the muzzle must be held down until the cartridge or case is removed.

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## VII CONCLUSIONS

26. The Test Section concludes:

a. That the T-20, I.M.P. is at least equal to other types of machine pistols for general military use.

b. That if the magazines are made of tougher steel and the faulty cocking pawl corrected the weapon will be superior to other types of machine pistols for general military use.

H. G. SYDENHAM,
Colonel, Infantry,
Chief of Test Section.

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IB-472.6(12-7-42) 1st Ind.

THE INFANTRY BOARD, Fort Benning, Georgia, December 11, 1942.
To: Chief of Test Section, The Infantry Board, Fort Benning, Ga.

1. For test in accordance to instructions contained in the basic letter.

2. Lt. Col. E. A. Chazal, Infantry, is the Board member in charge of this project.

For the President:

E. A. CHAZAL,
Lt. Col., Infantry,
Acting Recorder.



APPENDIX "A"

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REQUIREMENTS SECTION
HEADQUARTERS
ARMY GROUND FORCES
ARMY WAR COLLEGE
WASHINGTON, D. C.

GNRMT-11/24324

Dec. 7, 1942.

SUBJECT: Test of T-20 Machine Pistol.

TO: The President, The Infantry Board,
Fort Benning, Georgia.

1. First Lieutenant E. G. Cooper, of the Small Arms Development Branch, Office of the Chief of Ordnance, is scheduled to arrive at Columbus, Georgia, enroute to Fort Benning, at 2:57 P.M., Wednesday, December 9th, 1942, bringing with him three samples of the subject weapon for an abbreviated service test by the Infantry Board. He is scheduled to leave for Fort Knox at 4:05 P.M., Saturday, December 12th, for a similar test by Armored Force Board.

2. The purpose of the abbreviated test is to inform the Infantry Board of the existence and characteristics of a sub-machine gun of a radically new design which is claimed to have the following advantages, among others:

a. Simplicity of manufacture and ease of production greatly exceeding the corresponding factors for other weapons of this class now known.

b. Superior functioning and reliability.

c. Accuracy equal or superior to that of any similar weapon now available.

d. Cost of production only a fraction of that of other corresponding weapons.

e. Constant cyclic rate regardless of make of ammunition fired.

f. The weapon breaks down for stowage and portage better than any similar weapon now known.

g. Simplicity of operation and maintenance.



COPY

APPENDIX "A"

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74127 11-24-42 ABERDEEN PROVING GROUND ORDNANCE DEPT.
Inland Machine Pistol. Right view.

43 [80-]

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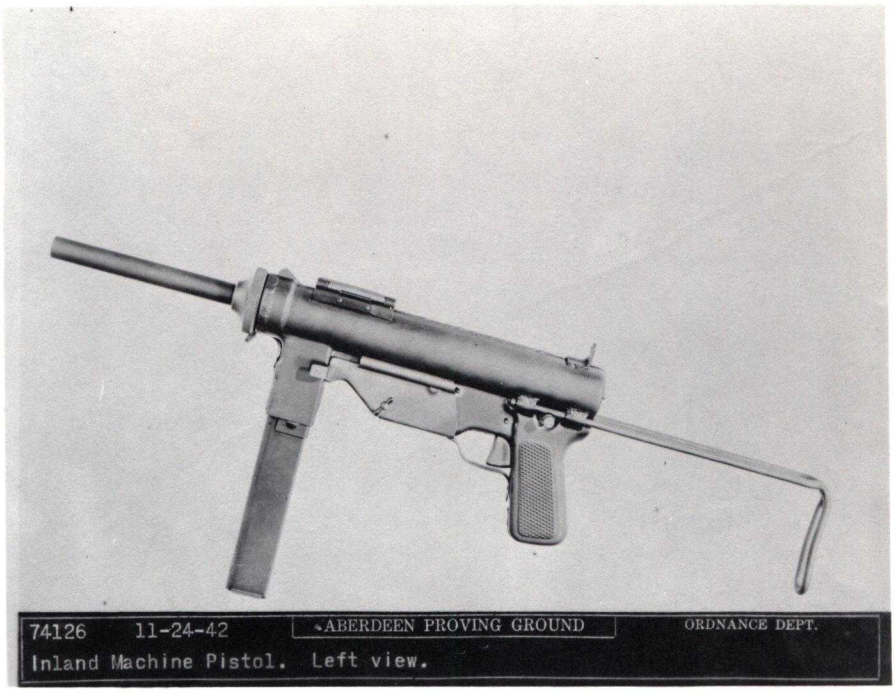

74126 11-24-42 ABERDEEN PROVING GROUND ORDNANCE DEPT.
Inland Machine Pistol. Left view.

43580-8

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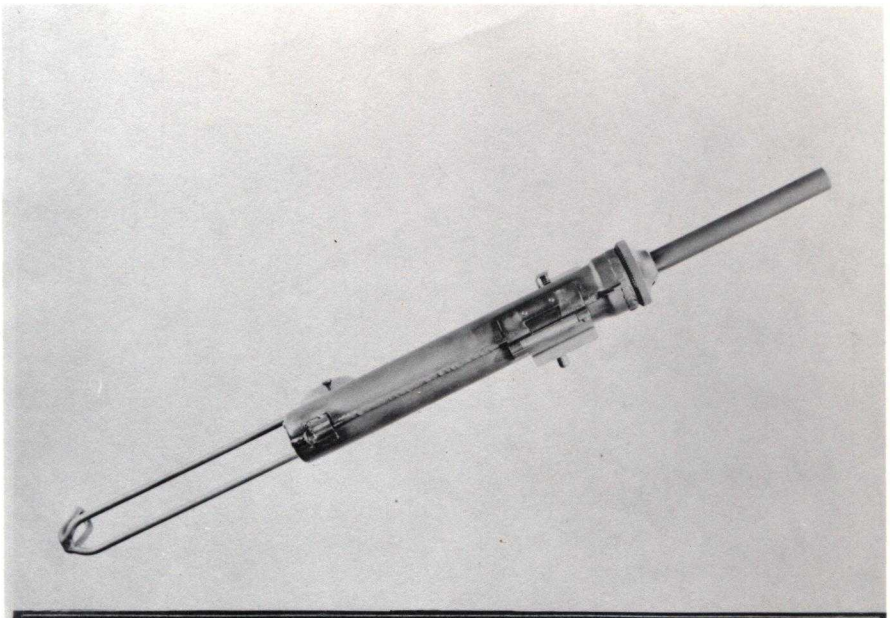

74128 11-24-42 ABERDEEN PROVING GROUND ORDNANCE DEPT.
Inland Machine Pistol. Top view.

43180-5

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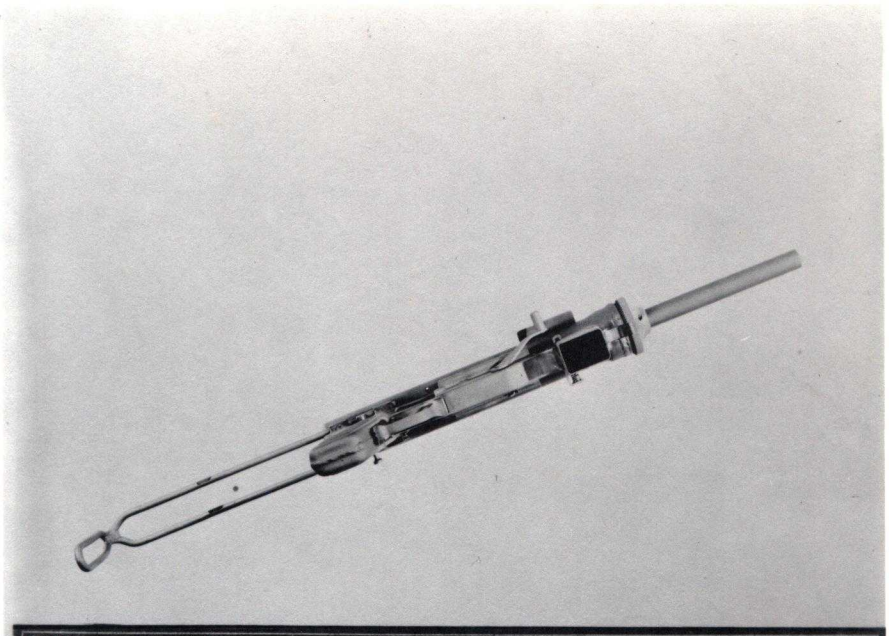

74129 11-24-42 ABERDEEN PROVING GROUND ORDNANCE DEPT.
Inland Machine Pistol. Bottom view.

43180-F

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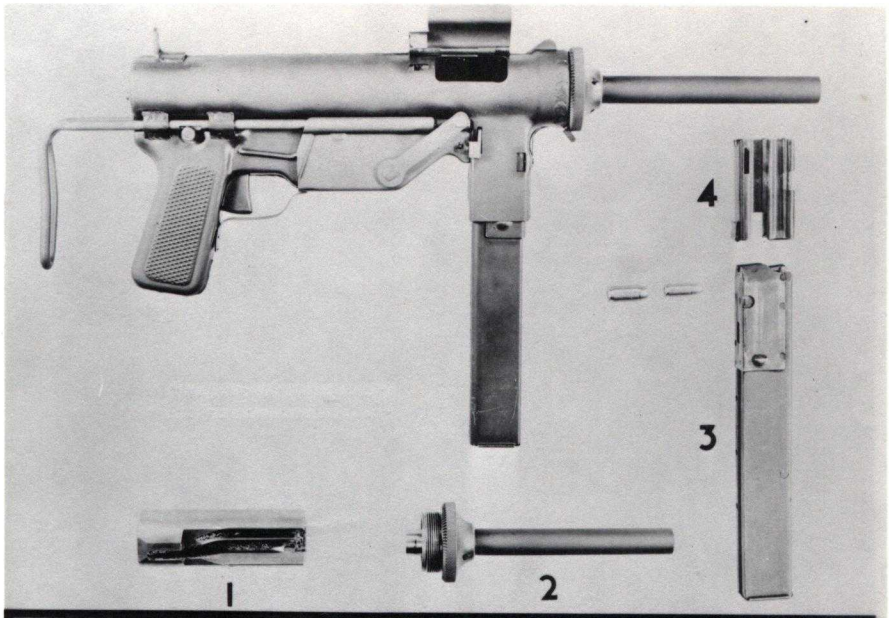


74133 11-24-42 ABERDEEN PROVING GROUND ORDNANCE DEPT.
Inland Machine Pistol. Conversion parts: Caliber .45 to 9 mm.

43150-1

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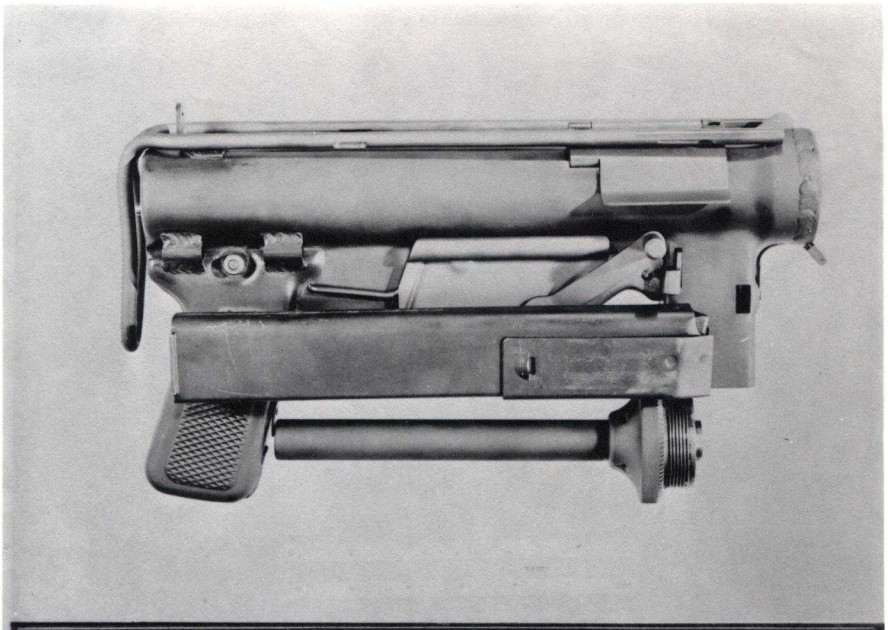

74130 11-24-42 ABERDEEN PROVING GROUND ORDNANCE DEPT.
Inland Machine Pistol. Takedown for packaging.

43580-6

DECLASSIFIED
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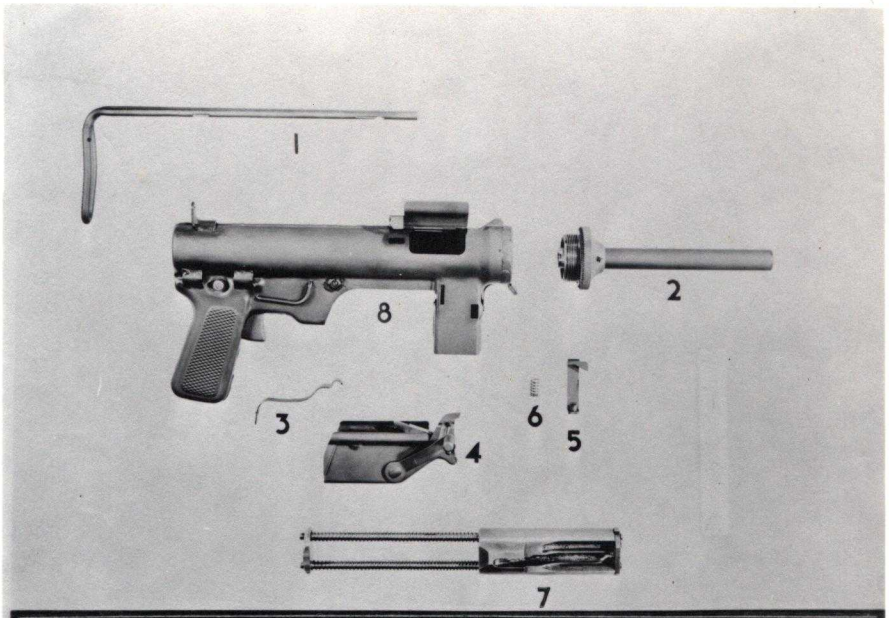


74131 11-24-42 ABERDEEN PROVING GROUND ORDNANCE DEPT.

Inland Machine Pistol. Field strip, right side.

43580-3

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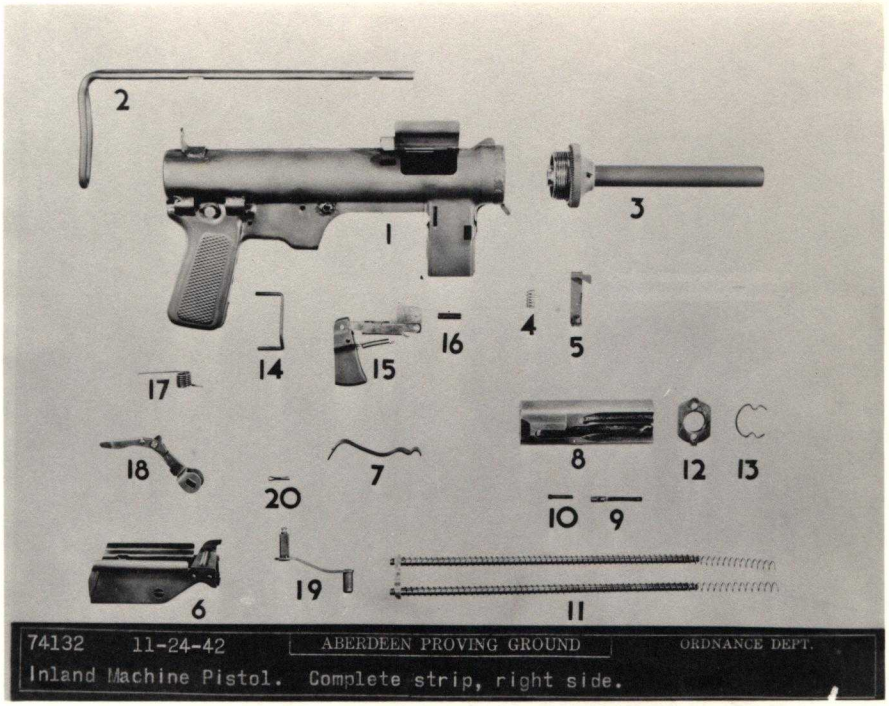


43580-2